

The drawings have been objected to as allegedly failing to show the features recited in Claims 23-25, 49, and 50. While not conceding the propriety of this objection,

Applicants have cancelled Claims 24, 49, and 50 and are submitting a proposed new drawing (Fig. 53) by a separate paper filed concurrently herewith. Applicants submit that the new drawing is supported in the original specification at least at, for example, page 9, line 19 through page 10, line 23 and page 33, lines 6-11, as well as in the original claims.

Therefore, no new matter is being added. Favorable consideration is requested.

In conjunction with the new drawing, the specification has been amended to describe the new drawing. Support for these amendments can be found, for example, at least where support for the new drawing is provided as discussed above. No new matter has been added.

Claims 11-25, 49 and 50 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner made specific objections to Claims 11, 18, 19, 23, 24, and 49. Since Claims 24 and 49 have been cancelled, those objections are moot. Regarding Claim 19, the Examiner asserted that “the parallax image” lacks proper antecedent basis. Applicants respectfully note that the phrase used in Claim 19 is actually “the parallax images” and antecedent basis can be found in the earlier part of Claim 19 that reads “switching between parallax images taken by the image capture means.” Claims 11, 18, and 23, those claims have been amended in view of the Examiner’s comments. Regarding Claim 23 in particular, Applicants submit that the claim is directed to a stereoscopic display system including both an image display apparatus having image display means for displaying a parallax image and image capture means for capturing an image of an object. Applicants submit that the amendments to Claims 11, 18, and 23 overcome the objections,

and Applicants request favorable reconsideration and withdrawal of the rejection under
Section 112, second paragraph.

Claims 19-21 were rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 6,233,003 (Ono). Applicants respectfully traverse this rejection for the reasons discussed below.

As recited in Claim 19, the present invention includes, among others, the features of aperture generating means for spatially and temporally dividing a pupil of an imaging optical system into a plurality of apertures and controlling a passing beam to each aperture, and control means for controlling switching between parallax images taken by an image capture means in correspondence to the respective apertures of the pupil so as to effect input of the parallax images, wherein the aperture has a size no more than half the size of a human pupil and can be positioned at one of plural positions within an area substantially equal to the size of a human pupil . As recited in Claim 20, the present invention includes, *inter alia*, the features of aperture generating means for controlling a position or a size of a pupil of an imaging optical system, dividing the pupil into a plurality of apertures, and limiting a beam-passing aperture, and control means for making image capture means successively take corresponding parallax images according to positions of the aperture of the pupil, wherein the aperture has a size no more than half the size of a human pupil and can be positioned at one of plural positions within an area substantially equal to the size of a human pupil.

Applicants submit that Ono fails to disclose or suggest at least the above-mentioned features, and therefore the present invention recited in Claims 19 and 20 is patentable over

Ono. Dependent Claim 21 recites additional features and is patentable for the same reasons as Claims 19 and 20 and for the additional features it recites.

Claims 1 through 18 were rejected under 35 U.S.C. §103 as being obvious over U.S. Patent No. 5,719,701 (Sudo). Claims 22-25, 49, and 50 were variously rejected under Section 103 as being obvious over combinations of Ono and Sudo. Applicants respectfully traverse these rejections for the reasons discussed below.

As recited in Claim 1, the present invention includes, *inter alia*, the feature of image switching control means for controlling switching between parallax images of an image display means in correspondence to passing beams through respective areas of an exit pupil, wherein a plurality of parallax images are perceived by a single eye of an observer.

As recited in Claim 2, the present invention includes, among others, the feature of exit pupil control means for controlling a position or a size of an exit pupil in a direction perpendicular to an optical axis, dividing the exit pupil into a plurality of areas, and successively generating the plurality of divided areas of the exit pupil without duplication, wherein image display means successively displays corresponding parallax images according to beams passing the respective areas thus generated.

As recited in Claim 11, the present invention includes, *inter alia*, the feature of control means for selecting an arbitrary aperture out of a plurality of apertures as a passing area of light and for controlling a position of the light-passing aperture in a divided aperture and a parallax image displayed on an image display means.

The Office Action asserts that Sudo meets all the limitations of these claims except that it does not teach that a plurality of parallax images are perceived by a single eye of an

observer. The Office Action then asserts that such feature is either inherent or an obvious matter of design choice because it allegedly merely involves changing the size of the aperture for the benefit of controlling the quality of the image being observed by the observer. Applicants respectfully disagree.

The above-mentioned features are neither inherent (i.e., necessarily present) in Sudo or an obvious design choice. The Examiner suggests that providing multiple parallax images to a single eye is for obtaining a desired quality (i.e., resolution) of an image. That is not the case. In fact, in order to make the depth of field deeper, it is not necessary to present a plurality of positions of an exit pupil to a single eye. Rather, it is sufficient to stop the pupil of the image forming optical system down. (It should be noted that the pupil of the image forming optical system is different from the exit pupil of the image forming optical system.)

In contrast, in the present invention recited in Claims 1, 2, and 11, the feature of providing multiple parallax images to a single eye is not provided for improving image quality or resolution, but instead is provided for the purpose of realizing a stereoscopic display of super-multiview regions, so as to permit an observer to observe the stereoscopic image in a good condition without feeling fatigued.

For the foregoing reasons, Applicants submit that the features of Claims 1, 2, and 11 are not inherent in Sudo and that there is no suggestion or motivation for one skilled in the art to adapt the system of Sudo to have those features. Applicants further submit that Ono likewise fails to disclose or suggest at least the above-mentioned features. Accordingly, Applicants submit that Claims 1, 2, and 11 are patentable over the cited art, whether considered individually or in combination.

Dependent Claims 3, 4-10, 12-18, 22, 23, and 25 recite additional features that further distinguish the claimed invention from the cited art. Further individual consideration of the dependent claims is requested.

In view of the foregoing, Applicants submit that this application is in condition for allowance. Favorable reconsideration, withdrawal of the outstanding rejections and objection, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, DC office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO THE CLAIMS

11. (Amended) An image display apparatus comprising image display means for displaying a parallax image, a display optical system for guiding light from the image display means to a divided [dividing] aperture [, said dividing aperture] having a plurality of apertures, [wherein] and control means for selecting an arbitrary aperture out of the plurality of apertures-[is selected] as a passing area of light [,] and [control means] for controlling a position of the light-passing aperture in the divided [dividing] aperture and the parallax image displayed on the image display means.

18. (Amended) The image display apparatus according to Claim 11, wherein each of said image display means and said divided [split] aperture comprises a transmissive spatial light modulator.

19. (Amended) An image input apparatus comprising [imaging] image capture means for capturing an image of [imaging] an object, an imaging optical system for guiding light from the object to the image capture [imaging] means, aperture generating means for spatially and temporally dividing a pupil of the imaging optical system into a plurality of apertures [areas] and controlling a passing beam to each aperture [area], and control means for controlling switching between parallax images taken by the image capture [imaging] means in correspondence to the respective apertures [areas] of the pupil so as to effect input of the parallax images, wherein the aperture has a size no more than half the size of a human pupil and can be positioned at one of plural positions within an area substantially equal to the size of a human pupil.

20. (Amended) An image input apparatus comprising image capture [imaging] means for capturing [imaging] object information, an imaging optical system for guiding light from an object to the image capture [imaging] means, aperture generating means for controlling a position or a size of a pupil of the imaging optical system, dividing the pupil into a plurality of apertures [areas], and limiting a beam-passing aperture [area], and control means for making the image capture [imaging] means successively take corresponding parallax images according to positions of the aperture of the pupil, wherein the aperture has a size no more than half the size of a human pupil and can be positioned at one of plural positions within an area substantially equal to the size of a human pupil.

23. (Amended Twice) A stereoscopic display system comprising the image display apparatus of Claim 1, 2, or 11, and further comprising an image input apparatus comprising image capture [imaging] means for capturing an image of [imaging] an object, an imaging optical system for guiding light from the object to the image capture [imaging] means, aperture generating means for spatially and temporally dividing a pupil of the imaging optical system into a plurality of areas and controlling a passing beam to each area, and control means for controlling switching between parallax images taken by the image capture [imaging] means in correspondence to the respective areas of the pupil so as to effect input of the parallax images.